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ABSTRACT

A review of literature focuses on the literacy acquisition process of deaf children who acquire American Sign Language (ASL) as a first language and written English as a second language. Literacy in this context is defined broadly to include the context and culture in which reading and writing occur, referring to the strong connection between language learning, the individual, and the community and emphasizing the importance of literacy acquisition and problems that can occur when literacy in this broad sense is impaired. Topics addressed in the review include: the nature of bilingualism; bilingual deaf education (BDE), or the teaching of English to deaf children as a second language (including the differences in the natures of ASL and English and differences between BDE and other forms of bilingual education); and the need for special strategies for literacy instruction for deaf children (motivation and self-concept development, teacher understanding of the principles of language development, the role of basic knowledge of the first language (ASL) in developing literacy, the speak-then-read approach, allowing student use of translation, emphasis on comprehension, incorporation of culture into instruction, use of cultural role models). Contains 56 references. (MSE)

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Literacy Acquisition in Deaf Children:

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Introduction

The focus of this paper is the literacy acquisition process of Deaf[1] children who acquire American Sign Language as a first language and written English as a second language. Although literacy is commonly interpreted as meaning the ability to read and write textual material, in this research it will be defined more broadly to include the context and culture in which reading and writing occur. A view of literacy that goes beyond the basic tasks of textual decoding and encoding outlines the strong connection between language learning, the individual, and the community. It also emphasizes the relationship between language and the individual's thinking and identity. This broad framework emphasizes the importance of literacy acquisition for all individuals including Deaf people, and the problems that can occur when literacy in this broad sense is impaired.

There are good historical reasons for the literacy impairment of Deaf children. Prior to the 1970's, the education of Deaf children in Canada occurred through almost exclusively oral methods. This approach primarily emphasized the use of amplification (hearing aids) to develop speaking and listening skills. The educational focus was to remediate the deficits of Deaf children to help them become more like hearing people. Frequently this emphasis on speech skills took precedence over facilitating non-oral language development and teaching Deaf people to become literate.

Simultaneous communication - speaking and signing at the same time - was introduced and flourished in the 1970's. This method of communication used signs from American Sign

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[1] Following the convention proposed by Woodward (1972) I use the lowercase *deaf* when referring to the audiological condition of not hearing, and the uppercase *Deaf* when referring to a particular group of deaf people who share a language - American Sign Language (ASL) - and a culture.

Language (ASL), but presented them in the word order of spoken English. Some signs were invented to more directly match English words, and frequently grammatical markers and word endings were added to signs to reflect English grammatical structures. The purpose of using this method of communication in the classroom was to expose Deaf children to a visual model of English and thereby facilitate their development of spoken and written English. In theory, the notion of altering a language to more accurately reflect the written code should facilitate the acquisition of the written form. However, the use of simultaneous communication, or sign supported speech, has two major flaws. Firstly, the appropriateness of altering language for instruction is questionable. Programs teaching French to English-speaking children or adults, do not facilitate this instruction by first introducing French words in English word-order or French words with English grammatical endings. It is appropriate to draw comparisons between the two languages, but not to alter existing grammatical rules and structures (Genesee, 1994). Secondly, it must be questioned whether English, as a spoken language, can accurately be represented in manual form. It was effectively documented that many of the grammatical structures of English were not included in teachers' use of English-based signing (Johnson, Liddell, & Erting, 1989). For these reasons, during the 1980's educators and researchers began to realize that simultaneous communication was not having the desired effect on the educational outcome of Deaf students. The overall reading level of high school graduates had not increased beyond the previous level of grade four.

One group of Deaf children, however, consistently scored higher on tests of English reading skills than their Deaf peers with hearing parents: those with Deaf parents. These children, it seemed, became fully immersed in American Sign Language (ASL), and treated it as their first

language. Written English was therefore learned as if it were a second language, and these Deaf children became essentially bilingual (Hoffmeister & Wilbur, 1980). These observations established the premise that Deaf children should learn ASL as a first language and English should be introduced as a second language, and that Deaf education should be a form of bilingual education. The how, when and who of implementing ASL-English bilingualism, however, continue to be debated and delineated.

Deaf children may access text similar to children who are learning English as a second language, although the processes are not parallel. Hearing children learning English as a second language frequently learn to speak English before or while they learn to read it, whereas Deaf children learn English through reading it. The advocates for teaching English as a second language to Deaf children emphasize the importance of first establishing a language base in a natural and accessible language. In guiding a Deaf child's entry into text, respecting her primary language to enable her to establish a productive relationship to the written medium is very important (List, 1990). This implies that ASL and English should be recognized as separate and distinct languages, but valued equally. Each language has its unique grammatical features, but neither is better or worse than the other. The similarities in the meanings English and ASL express need to be made explicit. Reading and writing are deeply rooted in the relationship that a person establishes to language and to social communication in general (Vygotsky, 1978). If the Deaf child's only experience with written words is linking them to spoken words which she cannot hear, or meaningless articulatory movements, her interest will wane. She will not be motivated to learn more about these written symbols. Linking written script to signs which have meaning for the child allows literacy skills to emerge from prior knowledge and experience.

Overall, there is agreement that early exposure to ASL allows Deaf children to establish an effective way to communicate and interact with the world around them (Paul & Quigley, 1987). Disagreements arise in how this knowledge should be applied to guide them into reading and writing English. Hearing people have the advantage that the correspondence between the written pieces and the retrievable speech patterns follow the same linguistic structure. Additional translation steps are needed for the Deaf learner. The exact nature of these steps and how to facilitate their development have yet to be defined.

The theories of bilingual and biliterate education can be applied to programs educating Deaf students. As a result several schools and programs for Deaf children in Canada have adopted a bilingual/bicultural philosophy (Isrealite, Ewoldt & Hoffmeister, 1992). However, a gap remains between the theoretical aspects of this philosophy and the practical aspects of its implementation. Teachers continue to question if they can use their students' knowledge of ASL to develop and promote the English literacy skills of these Deaf children. We know that Deaf children who grow up in an ASL environment learn ASL in ways analogous to hearing children learning their spoken language (Meier, 1991; Pettito & Marentette, 1991). What we do not know is how Deaf children learn English nor how they learn to read and write it. There is now growing evidence from case studies to support bilingually-focussed, alternative conceptions and pedagogies as successful in the language and literacy education of Deaf children, and the evidence deserves further exploration.

Literature Review

An understanding of bilingual education with Deaf students builds upon the general study of bilingualism. This paper, therefore, includes a discussion of current literature in the area of spoken language bilingualism, followed by applications of the information to bilingual programs for Deaf children using the languages of ASL and English. Studies which relate theory and practice, and that emphasize the use of ASL to facilitate acquisition of English literacy are also highlighted.

Bilingualism

For most of the history of the study of language development, bilingualism was considered a disadvantage to children cognitively, intellectually, and educationally (Reynolds, 1991). This attitude began to change, however, as a result of a landmark study by Peal and Lambert (1962). Using standardized assessment of French-English bilingual children in Quebec, these researchers suggested that bilingual children, in comparison with unilingual children, demonstrated increased mental flexibility, superiority in concept formation, and a more diversified set of mental abilities. These conclusions were supported by Vygotsky's sociocultural learning theory, which emphasized the significance of language as the primary mediator in learning about the world (Vygotsky, 1978). Vygotsky suggested that through bilingualism the child could view phenomena under more general categories, to see each language as a particular system among many, and ultimately to gain an awareness of linguistic operations.

Since the work of Peal and Lambert, other research studies have tended to emphasized the benefits of bilingualism and bilingual education programs (Reynolds, 1991). Research on

bilingualism expanded from describing the cognitive benefits to describing the psycholinguistic effects, such as the relationship between the two languages and their mental representations. In general, the psycholinguistic research suggested that bilingual people display both independent and interdependent functioning between languages. It therefore also suggested that their underlying cognitive systems are structurally separate and yet interconnected (Paivio, 1991).

The paradox of bilingual functioning as both independent and interdependent is resolved by considering mental representation models in which each language is stored separately but linked with a common conceptual core. This is proposed by the bilingual dual coding model, which assumes direct connections between the two languages, and a nonverbal imagery system functioning as a shared conceptual system for the two languages (Paivio, 1991). The three systems (two verbal systems and one imagery system) can function independently, but are also connected. Correspondences among the three systems can be one-to-one or one-to-many, depending on the language acquisition history (the two languages learned simultaneously or consecutively) and conceptual/experiential background of the bilingual individual.

The assumption that two separate language systems are linked to a common conceptual core plays a significant role in bilingual educational programs, because it suggests a common underlying proficiency (Cummins, 1984). It also implies that experience with either language can promote the proficiency underlying both languages. To understand the transfer of skills across languages, however, an examination of the relationship between language proficiency and academic achievement is needed.

Frequently, educators and researchers have erroneously assumed that the language proficiency required for ESL students in everyday communication is similar to that required for

performing an English cognitive/academic task. Research, however, suggests a distinction between the two. Immigrant students require, on the average, five to seven years to approach grade norms in English academic skills, although they demonstrate peer-appropriate conversational skills in English within about two years of their arrival (Cummins, 1984). The primary reason for the lag is context. Conversational skills reflect a surface fluency of the language's more formal aspects, such as pronunciation, basic vocabulary and grammar, and are supported by contextual cues and information. Academic language proficiency requires an understanding of the language's deeper structures, such as semantics and pragmatics (rules of language use), within decontextualized situations. In the context-reduced interactions of many academic tasks, it is necessary to focus on the linguistic forms themselves for meaning rather than on the speaker's intentions.

Understanding this difference provides a framework for instruction and assessment in bilingual educational programs, and explains the academic difficulties which conversationally fluent ESL students may encounter in the classroom. It also gives clues about the nature of the relationship between language proficiency and academic achievement, and about the nature of the common proficiency underlying bilingual language development. In particular, it suggests that the common proficiency exists not at the surface levels (pronunciation, grammar, vocabulary) of the first and second languages, but at the deeper conceptual levels (Cummins, 1984). The common proficiency facilitates the transfer of cognitive/academic or literacy-related skills across languages. The skills would include conceptual knowledge, subject matter knowledge, higher-order thinking skills, reading strategies, and writing composition skills. In a French-English bilingual program, for example, French instruction developing first language reading skills is not just developing

skills in French, but also a deeper proficiency related to the development of written literacy and general academic skills. Presumably similar benefits might happen in an ASL-English bilingual program. This possibility will be explored in this research while at the same time taking account of the differences between oral bilingualism (e.g., French-English) and Deaf bilingualism (ASL-English).

Bilingualism and Deaf Children

Although bilingual education programs had been accepted as beneficial for hearing children for several decades, the idea of Deaf education as a form of bilingual education is recent (Strong, 1988). The movement to teach English to Deaf students as a second language came out of the research documenting natural sign languages of the Deaf as languages (Baker & Battison, 1980; Johnson, Liddell, & Erting, 1989). As this research became widely known, Deaf people in Canada and the United States identified themselves as a linguistic minority rather than a disabled group. Gradually the shift to cultural affiliation has influenced Deaf education by shifting its focus from special education to bilingual education.

Bilingual Deaf Education (BDE) differs from other bilingual programs in significant ways. The first difference is in language modality. Proponents of BDE advocate that students' first language be a natural visual-spatial language, such as ASL (Davies, 1991; Johnson, et al, 1989). Such a language, they argue, functions and is represented mentally in ways analogous to spoken languages.

Linguistic analysis of ASL shows that it is a complex, structured language with distinct grammar, and that it exhibits the fundamental properties that linguists have posited for all

languages (Klima and Bellugi, 1979). The properties are manifested in distinctive structural characteristics of simultaneity and the use of space. Simultaneity means that features, such as movement and facial expression, are produced at the same time as the root sign and thereby add to, or alter, its meaning. In this way several morphemes are expressed at once. Points in space are used to refer to people, things, and places that are not present. The linguistic structures of ASL are adapted to maximize visual processing, visual memory and manual dexterity. ASL uses simultaneity and the use of space to convey similar concepts that depend on a sequential transmission of sounds in spoken language. For example, ASL is uniquely adapted to capitalize on the processing differences between Deaf and hearing individuals by using space and motion where spoken language uses time for the same purpose.

Studies examining the linguistic features of ASL show that ASL functions in the same way as spoken languages. It allows people to request, command, argue and persuade as well as to express feelings, tell jokes, and create poetry. Further evidence that ASL is a bona fide language exists in the study of its acquisition by children, both Deaf and hearing, with Deaf parents. In these children language acquisition parallels that of children learning spoken languages; children of Deaf parents, for example, also experience periods of over- and under-generalization of ASL rules, just like children learning English (Meier, 1991).

Although ASL does not result in a difference in function or development, the question of a difference in mental representation remains, particularly since ASL uses visual and spatial skills rather than auditory ones. This issue was addressed by Bellugi, Poizner, and Klima (1989) by studying the cognitive and language skills of Deaf people suffering left and right-sided brain lesions. They found that the left cerebral hemisphere in these persons was specialized for signed

language, in the same way that the left cerebral hemisphere of hearing people is specialized for spoken language. The researchers argued, further, that the left hemisphere appears to be innately predisposed for language, as well as independent of language modality. Neurologically, therefore, ASL may function very much as a "verbal" language. Although its surface structures are significantly different from spoken languages, ASL at a deeper level is related to the same conceptual core or common underlying proficiencies.

The difference in modality between spoken and written English may also influence Deaf children's acquisition of English literacy. Although hearing children learn to read by forming sound-symbol associations, learning to read without forming such associations is necessary, and hopefully possible, for Deaf children. In other words, being a symbol without being mediated by the sound system should be possible for a visually represented pattern. This is the case for mathematical "sentences". The symbols can be verbalized through the sound system; however, this frequently inhibits, rather than helps, the processing of the "sentences". The written symbols appear to map directly to mental concepts without being mediated by speech.

Further insight into learning to read can be gained by considering orthographies that are syllable-based and therefore less dependent on phonetic associations. In the case of Japanese, for example, Hatano (1986) states that an experienced reader of Japanese uses several different internal codes for a word. Japanese orthography has two distinct written systems, one linked with pronunciation (called kana) and the other linked with meaning (kanji). Meaning is achieved by the Japanese reader directly through the kanji symbols, but can also be mediated through the kana symbols and the phonetic code. The Japanese experience suggests that similar processes might occur in Deaf readers reaching meaning from written language. At times they might access

meaning directly by the written symbol (word) or at other times through the sign code.

Another significant feature of BDE is that the first language, ASL, does not have a written form. Some have argued that this feature will reduce transfer of proficiency from ASL to English (Ritter-Brinton, 1996). The argument assumes, however, that literacy consists only of the reading and writing components of language. A broader definition of literacy, one that includes the context of language use, changes the predictions somewhat. When literacy is defined broadly, it is clear that it requires a range of abilities, spanning from formal, decontextualized language to more conversational language. Literacy becomes the ability to use appropriate language forms depending on the social context. Schley (1992) studied the ability of Deaf children to modify their ASL use in contextualized and decontextualized language situations and found that the children did produce different types of language appropriate to the situations. Their literacy-related and metalinguistic skills were part of the deeper structures of ASL and knowledge of them transferred across languages in bilingual children. By expanding the definition of literacy, in this way, bilingual proficiency and literacy would be expected to develop even where one language does not have a written form.

BDE differs from both bilingual education in heritage languages and bilingual education in second language immersion programs, in that the family language background of Deaf children is not consistent. Among children born Deaf, less than 10 percent come from families with even one Deaf parent or older Deaf relative (Meadow, 1972; Trybus & Jensema, 1978). When such relatives do exist, Deaf children can acquire ASL and in this way develop relatively normal socio-emotional family interactions. Bilingual programming for this minority of Deaf children would follow the typical approach of building on the "heritage" language, here ASL, and of introducing

English as a second language.

For the other 90 percent of Deaf children, however, the situation is quite different. Here the Deaf child is the first Deaf person in the family. For the child's parents, encountering deafness in the child is generally unexpected and traumatic. The parents and siblings of Deaf children seldom have the ASL communication skills required to provide these children immediate access to the acquisition of a natural language, a circumstance that limits access to the family's cultural knowledge and resources. The children tend to enter kindergarten without a sophisticated competence in any language, signed or spoken (Johnson, et al., 1989). Bilingual programming for these children, therefore, requires that they first develop proficiency in ASL, before facilitating acquisition of English as a second language.

The strategy of learning ASL first is supported by research with hearing bilingual children who have not established a clear first language before entering school. The Carpinteria Spanish-language preschool program, for example, initially consisted of a bilingual preschool in which both English and Spanish were used concurrently, but which put strong emphasis on English skills for children with a Spanish language background (Cummins, 1984). Kindergarten teachers reported, however, that children from these programs often talked with a mixed version of English and Spanish ("Spanglish"). As a result, the experimental program introduced a Spanish-only preschool with the goal of developing the children's school-readiness skills and simultaneously building their first-language skills. At the conclusion of the program, despite exclusively Spanish language programming, the children did better than other Spanish-speaking children on both Spanish and English assessments. Program developers attributed success to the use of meaningful language (i.e., Spanish), integrated into daily activities, factors which

encouraged high levels of conceptual and linguistic skills in both languages. The reinforcement of the children's identity and involvement of parents in the program was also considered to contribute to the positive outcome. Cummins concludes:

> "The findings clearly suggest that for minority students who are academically at risk, strong promotion of first language conceptual skills may be more effective than either a half-hearted bilingual approach or a monolingual English 'immersion' approach." (p. 149)

Strategies for Literacy Instruction with Bilingual Children

The differences described above between BDE and other forms of bilingual education frequently create confusion and inconsistency in the implementation of programs for Deaf students. In spite of differences, however, there are also aspects of orally based bilingual education which can be applied to bilingual education with Deaf students. Some of these are described in this section; they are drawn from the general literature on literacy instruction with bilingual children, but many are supported in the research regarding bilingual instruction with Deaf children.

Motivation and self-concept. Developing students' motivation and self-concept is important to any teaching, but it is particularly important with bilingual students who may not feel that their skills and knowledge are recognized because they cannot easily express what they know verbally. A sense of self-worth is encouraged by accepting the student's most familiar language as equal to any other language. Having faith that second language learners will learn and maintaining high expectations for them is also important.

Literacy in two languages (also called biliteracy), often occurs in a context of unequal

power relations, with one or the other literacy becoming marginalized (Hornberger, 1989). This is also true for biliteracy programs with Deaf children, with English dominating ASL. Factors that contribute to the marginalization of ASL include limited and recent linguistic awareness of ASL, attitudes that deafness is disability, and the lack of a written form for ASL. Furthermore, because of the past denigration of ASL and Deaf culture, overemphasising the value of ASL for Deaf children is often necessary. In the long term, however, ASL and English should be recognized as separate and distinct languages, but valued equally. Emphasizing the value of ASL can be accomplished, for example, by inviting storytelling by members of the Deaf community (Israelite, et al., 1992), and by teachers constructing, expanding, and modifying stories in ASL. These strategies can motivate students to create their own stories, and to take pride in their stories, language, and Deaf culture. Such pride can enable them to feel more confident and ready to learn English.

Language development. Teachers must have a thorough understanding of language development, so that they can monitor and sequence the linguistic "load" they place on the students. A key principle is that language learning is maximized by incorporating language development in the academic curriculum explicitly and systematically (Genesee, 1991).

The value of awareness of the linguistic load on Deaf students is illustrated in a study by Mozzer-Mather (1990). The investigator sought to improve Deaf students' writing by combining writing process and translation techniques. The students used transcribed English glosses (words) of their signed versions of stories to help them prepare written texts. Even though the students' first drafts in English deviated in many respects from conventional standard English, however, did not mean that they were unaware of the conventions. Instead, it reflected their difficulty in paying

attention to these concerns while juggling concerns about content during the creation of a first draft. Second drafts, written with the assistance of glosses to remind them of content, were substantially more grammatical than the first drafts. The reduction of the linguistic constraints, with regard to vocabulary, enhanced the volume, syntactic complexity, and correctness of the subjects' writing.

Basic knowledge of child's first language. Basic knowledge of a child's first language is also necessary, in order to be aware of points of linguistic interference or conflict between the two languages. The knowledge helps teachers to identify errors that are systemic in nature and can be eliminated by emphasizing the distinction between languages rules. The strategy is especially important for teachers of Deaf children. Clues to understanding Deaf students' linguistic processing may lie in their use of space, facial expression, or body shifting, even though these features are not part of written language expression and therefore can easily be overlooked. Deaf children must link new meanings in print with their existing knowledge of language, which is necessarily visual rather than auditory.

An understanding of fingerspelling and the rules for sign production, for example, can help in understanding Deaf children's invented spelling (Schleper, 1994). The strategy of handshape borrowing, or writing the word based on the handshape of the sign, may result in spellings not easily understood. For example, a child may spell "in" starting with a "B"; or "cat" starting with an "F", based on the handshapes used in producing the signs for these words. Substitutions of letters may also occur based on how closely they resemble each other on the hands, not whether they sound alike.

A case study of a Deaf child by Wilcox (1994) provides another example. Wilcox

documented how the child used phonology of ASL to solve the problems she faced in learning to read. The child created a three-way link between the visual phonetics of signed language, fingerspelling, and English orthography. The ASL handshape represented the meaning of the word, and the fingerspelling helped to link this meaning with the printed representation. It appeared that this Deaf child bypassed the phonological system and used a system she could understand. She did so by matching her existing linguistic knowledge of ASL constructs to print, even when her knowledge of ASL was limited, or when it conflicted with rules of English. For example, the child learned that the "-ing" ending in English represented the present progressive tense. She was also aware of the tendency for verb tense to be indicated at the beginning of sentences in ASL. This resulted in her producing sentences which combined elements of the two languages "incorrectly", such as, "-ING ME EAT ME." A teacher without knowledge of ASL grammar might have labelled these productions as language disordered rather than recognizing them as systematic problem solving.

Speak then read. Another general strategy in educating bilingual children is to teach them the spoken form of a language before introducing reading in the language. This practice has been questioned, however, in light of studies where "write first" instructional approaches have been more effective for developing literacy in some learners (Mercado, 1991; Wald, 1987). The belief that language develops sequentially from listening to speaking, to reading, and finally to writing therefore does not seem to occur for all students. All language processes may instead develop simultaneously, and practices such as those of delaying instruction in reading and writing until there is oral mastery of what is to be read in English as a second language are of questionable value, serving to limit the learning opportunities rather than enhancing them. The shift away from

requiring sequential mastery of literacy skills is promising for Deaf students since many Deaf children learn English through reading and writing.

Most models of second-language acquisition emphasize the importance of an internalized phonemic system in oral literacy acquisition processes (Rosner, 1986). But analogues exist for Deaf children, who seem to develop an internal representation of their visual language (Brooks, 1978). The process of developing reading skills in Deaf children must therefore link these internal structures to the grammatical features of written English. Ruiz (1995), in a case study of her Deaf daughter's literacy acquisition, found that the daughter did not need an orally-based, internalized phonemic system, nor the phonemic awareness activities or direct phonics instruction which many researchers and teachers consider indispensable.

Allow translation. Bilingual children should be allowed to translate to their first language (ASL) when reading in their second language (English), and the translations should not be considered errors. This is a useful reading strategy for making print meaningful.

One method for using ASL to teach English involves making comparisons and translations between the two languages explicit (Neuroth-Gimbrone & Logiodice, 1992). The students initially express story content in ASL, and the expressions are videotaped. The production of English writing then becomes a process of transcribing these videotapes. The relationship of spoken to written language needs to be taught and translation from one language (sign language) to another (written English) can be systematic (Erting, 1992). It appears that more attention should be directed to the non-manual components of ASL (movement, facial grammar, body shifting), as these convey vital grammatical information that needs to be linked explicitly to the corresponding grammatical features of English (Marshak, 1993).

Emphasize comprehension. In teaching second language learners, teachers should try to make information meaningful and comprehensible (Hudelson, 1994). The core of literacy is the construction of meaning, whether the text is the student's own or one written by others. The construction of meaning is central whether literacy is occurring in a first or second language.

Studies have documented this principle with Deaf students by showing, for example, that Deaf students use semantic clues to make sense of difficult grammatical structures (Yurkowski & Ewoldt, 1986). When they process these sentences, the Deaf readers appear to consider "what makes sense" rather than analysing the grammatical relationships between words. Unfortunately, instructional practices with Deaf children commonly emphasize the grammatical structures that focus on the Deaf students' weaknesses (syntax) and ignore their strengths (semantics). In response to Deaf students' difficulties with syntax, many educators simplify text to facilitate reading skills. Yet this response may inhibit language growth rather than promote it (Ewoldt, 1984, 1987). Without exposure to a variety of syntactic patterns, Deaf children cannot use their most effective strategies (semantics) for mastering the subtleties of syntax. The emphasis on semantic processes, however, must be developed systematically through exposure to appropriate background information, real life experiences, and the use of syntactically simpler reading materials.

Use the children's first language to determine comprehension. Written text in the child's second language can be discussed in the child's first language to ensure comprehension of the textual information and to develop vocabulary knowledge in context (Swaffar, 1988). For Deaf students, this means that instructional conversations can take place in ASL about written English and should also occur in written English about ASL (Erting, 1992). Formal instruction related to

higher-order thinking and literary forms have been helpful with Deaf students, whose problems occur not only at lexical and sentential levels but also at broader levels of context (Kretschmer, 1989), such as knowledge of genres, coherence, and author's voice and reader's perspective. Intervention with Deaf students should therefore include making textual structures and connections more explicit, and stimulating reflection by providing appropriate inferential questions. Teachers should use the students' native language in teaching these broader literacy skills that are necessary for the development of full reading comprehension (Paul and Quigley, 1987)

Incorporation of culture. Teaching bilingual students also requires having an understanding of their cultural values (Ching, 1976). Incorporating features of the visually-oriented features of the Deaf is essential in teaching Deaf children. Strategies can be as simple as flashing the lights to get attention and using a variety of visual aids when presenting lessons, or as complex as developing visual poetry. Besides visual strategies, ASL discourse patterns also influence the most effective method of presenting information. ASL frequently uses a "diamond" discourse strategy, where the main point is presented initially, followed by expansion and background information, and closing with a restatement of the main point (Small & Philip, 1992). This contrasts with the more typical English discourse strategy of beginning with general information and concluding with the specific point.

Deaf communities operate collectively as opposed to the more individualistic standard common in Canadian culture (Philip, 1987). In the classroom this principle means agreeing as a group on the rules and expectations for behaviour, rather than the teacher telling the students what the rules are. It also means deciding by consensus, where possible, rather than by majority

rule. A belief in collectivism also fosters peer teaching. Students are encouraged to work as a group so that concepts are understood by all, and tasks are completed by everyone. Although collaboration like this may be good teaching practices with any children, interactional activities have been especially beneficial for second language learning (Genesee, 1991).

Use of native language/cultural role models. An essential element of BDE is having teachers who are true role models for Deaf culture. In practice such teachers need to be Deaf themselves, as well as fluent signers of ASL and skilled readers of written English. Several studies have emphasized how Deaf parents and teachers naturally elicit more interaction with Deaf children because they are so much more visually attuned than are hearing people (Erting, 1988; Mather, 1989; Padden & Ramsey, 1996). The study by Mather (1989), for example, compared a Deaf and a hearing educator's presentation of a story to Deaf children. The Deaf teacher's fluency in ASL allowed her to modify her register to meet the diverse language needs of all the students in the group, and to enter into truly meaningful conversation with them. Many of the strategies she used, such as asking "wh" questions rather than "yes/no" questions, were not unique to Deaf teachers, but were good teaching practices in general. They apparently proved more difficult, however, for the hearing educator, whose limited ASL skills and stronger auditory orientation may have caused her to rely on more structured activities that controlled the language interaction.

Similarly, hearing parents reading with their Deaf children were found to be more structured in approach and to create fewer links between the book and personal experiences than parents reading with their hearing children (Paul and Quigley, 1987). The differences presumably limit the development of pre-reading skills in Deaf children, and are presumably linked to

difficulties with meaningful conversations as well. To understand how hearing parents can best facilitate the literacy skills of their Deaf children, therefore, learning from Deaf families is necessary (Erting, 1992), where more natural interaction occurs.

Conclusion

The following quotation summarizes the current trends in literacy instruction with bilingual students:

> "The more the learning contexts allow students to draw on the three continua of biliterate development, that is, both oral and written, both receptive and productive, both first and second language skills, the greater the chances for their biliterate development." (Hornberger, 1990, p.3)

The traditional progression from listening to speaking, to reading, and finally writing, is no longer considered the only path to literacy. The newer, multiple approach bodes well for Deaf children, who do not have access to all the steps along the traditional path. Literacy in their first language, ASL, gives the initial tools of experience, meaningful concepts, and deeper linguistic awareness that facilitate later learning of written English.

The newer approach to BDE, however, has only emerged recently, and has barely begun to benefit Deaf children. A paradigm shift from a medical or disability perspective to a cultural perspective of Deaf children was necessary to link the fields of ESL teaching and Deaf education. Educating Deaf children is finally getting to the point where it can take advantage of ESL techniques because research is focussed on similarities, albeit in a different mode, rather than differences. Several strategies which have been effective in bilingual educational programs with

hearing children have also been successfully applied to teaching Deaf students. These include encouraging motivation, developing students' self-concepts, understanding language development, knowing the students' first language, allowing translation, emphasizing comprehension and using the students' first language to do so, incorporating cultural values and the presence of native language role models.

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